

What is claimed is:

1. (Original) A system for measuring a parameter in a subsea well, comprising:
a riser extending from a platform adjacent the ocean surface towards the ocean bottom;
a landing string extending within the riser from the platform towards the ocean bottom; and
a line extending along at least part of a length of the landing string and including a distributed sensor system for sensing the parameter at various points along the length of the landing string.

2. (Original) The system of claim 1, wherein:
the landing string extends at least partially within a pressure control equipment at the ocean bottom; and
the line extends at least partially within the pressure control equipment.

3. (Original) The system of claim 1, wherein the line comprises a fiber optic line.

4. (Original) The system of claim 1, wherein the parameter measured is temperature.

5. (Original) The system of claim 4, wherein the distributed sensor system comprises a plurality of sensors distributed along the length of the line.

6. (Canceled)

7. (Canceled)

8. (Original) The system of claim 1, wherein the line is mechanically attached to the landing string.

9. (Original) The system of claim 3, further comprising:
a conduit located proximate the landing string; and
the fiber optic line located within the conduit.

10. (Original) The system of claim 9, wherein the conduit is within a control
umbilical deployed as part of the landing string.

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Original) The system of claim 1, wherein:
the landing string is landed on a landing shoulder located on a pressure control
equipment; and
the line extends below the landing shoulder.

18. (Original) The system of claim 17, wherein:
the landing string includes a passageway having a port above the landing shoulder
and a port below the landing shoulder, each port providing communication to the exterior
of the landing string; and

the line is extended below the landing shoulder by passing the line through the passageway and the ports past the landing shoulder.

19. (Original) The system of claim 18, wherein:

the line is a fiber optic line;

a conduit is located proximate the landing string and is aligned with the passageway port located above the landing shoulder; and

the fiber optic line is located within the conduit and is extended below the landing shoulder by passing the line through the passageway and the ports past the landing shoulder.

20. (Original) The system of claim 19, wherein the fiber optic line is deployed by pumping the fiber optic line through the conduit and passageway.

21. (Original) The system of claim 20, wherein:

a second conduit is aligned with the passageway port located below the landing shoulder;

the fiber optic line is located within the conduit, is extended below the landing shoulder by passing the line through the passageway and the ports past the landing shoulder, and extends within the second conduit; and

the fiber optic line is deployed by pumping the fiber optic line through the conduit, passageway, and second conduit.

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Original) A method for measuring a parameter in a subsea well, comprising:
deploying a landing string within a riser, the landing string and riser extending from a platform on the ocean surface towards the ocean bottom;
deploying a line along at least part of a length of the landing string, the line including a distributed sensor system for sensing the parameter at various points along the length of the landing string ; and
measuring the parameter at the various measurement points along the length of the landing string.

29. (Canceled)

30. (Original) The method of claim 28, wherein the measuring step comprises measuring temperature at the various measurement points along the length of the landing string.

31. (Original) The method of claim 30, wherein the line comprises a fiber optic line and the measuring step comprises transmitting light through the fiber optic line and analyzing the returned back-scattered light to provide a complete temperature profile along the length of the fiber line.

32. (Canceled)

33. (Canceled)

34. (Canceled)

35. (Canceled)

36. (Original) The method of claim 28, wherein:

the deploying the landing string step comprises landing out the landing string at a landing shoulder located on a pressure control equipment; and

the deploying the line step comprises extending the line below the landing shoulder.

37. (Canceled)

38. (Canceled)

39. (Canceled)

40. (Canceled)

41. (Canceled)

42. (Canceled)

43. (Original) A method for monitoring solids in a tubing, comprising:

deploying a fiber optic line along at least part of the length of the tubing, the line comprising a part of a distributed temperature sensor;

measuring the temperature along at least part of the length of the tubing with the distributed temperature sensor; and

determining the presence of solids near the tubing by analyzing the temperature measurements.

44. (Original) The method of claim 43, wherein the measuring the temperature comprises measuring the temperature inside the tubing.

45. (Original) The method of claim 43, wherein the measuring the temperature comprises: measuring the temperature outside of the tubing.

46. (Canceled)

47. (Canceled)

48. (Canceled)

49. (Canceled)

50. (Canceled)

51. (Original) The method of claim 43, further comprising monitoring the removal of solids in response to the measuring.

52. (Original) The method of claim 43, further comprising identifying a substance near the tubing in response to the determination of the presence of hydrates near the tubing.

53. (Original) The method of claim 43, wherein the determining step further comprises determining the location of the solids by analyzing the temperature measurements.

54. (Original) The method of claim 52, wherein the determining step further comprises determining the effect of treatment conducted on the solids by analyzing the temperature measurements.

55. (Original) The method of claim 43, wherein the deploying a fiber optic line comprises pumping the line through a conduit located proximate the landing string by way of fluid drag.